EDELM 415 NOTEBOOK

MICROCOMPUTERS IN THE ELEMENTARY CLASSROOM

FALL 1992

JOE BUSTILLOS
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TUSTIN, CA 92680
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EDELM 415 NOTEBOOK

COMPUTER RESOURCES

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Joe Bustillos
EDELM 415 - Nov. 30, 1992
Computer Resources

Computer Stores:

Educational software sources:
Garden of Eden, 16485 Magnolia, Westminster, 714-841-4994 (long standing history of Apple/Educational support, referred to by The Apple Doctor, 714-859-2362).
Surplus Computer Software, Harbor just north of MacArthur, Santa Ana (more of a flea market style, also referred to by the Apple Doctor).

General software sources:

CompUSA, Fountain Valley, 714-965-0580 (MAC/IBM formats only).
Computer City, Garden Grove, 714-892-0070 (MAC/IBM formats only).
Egghead, Irvine, 714-559-5119 (MAC/IBM formats only).

Educational Computer Magazines:

THE COMPUTING TEACHER
MEDIA & METHODS
ELECTRONIC LEARNING
CUE NEWSLETTER

Consumer Computer Magazines:

BYTE, (subscriptions) P.O. Box 552, Hightstown, NJ 08520
Coast Computer Magazine, (mailing address) P.O. Box 19589-500, Irvine, CA 92713
PC Magazine, (subscriptions services) P.O. Box 54093, Boulder, CO 80322-4093
PC Techniques, (editorial offices) 7721 East Gray Road, Suite 204, Scottsdale, AZ 85260.
PC World, (editorial offices) PC World Editorial, 501 Second St. #600, San Francisco, CA 94107

Computer Television Programs:

Computer Chronicles, KOCE-TV, ch. 50, Friday, 6:00 p.m.
MacTV, ME/U, Monday & Saturday, 6:30 p.m.
New Literacy, KOCE-TV, ch. 50, Tuesday 6:30 & 7:00 a.m.

Joe Bustillos
EDELM 415 - Sept 28, '92
Software Evaluation

GENERAL INFORMATION ON SOFTWARE PROGRAM

Name of program: **Choices choices ~~on the Playground~~** Taking Responsibility
Publisher of program: **Tom Snyder Publications**
Date of publication: 1988
Cost of program: **79.95**
Hardware/software needed to utilize program: **Apple II, PRODOS 3.3**

Sources(s) to obtain program: **Garden of Eden, 16485 Magnolia, Westminster, 841-4994 (long standing history of Apple/Educational support, referred to by The Apple Doctor, 859-2362); Surplus Computer Software, Harbor just north of MacArthur, Santa Ana (more of a flea market style, also referred to by the Apple Doctor); General software sources: Egghead, Irvine, 559-5119 (MAC/IBM formats only); Computer City, Garden Grove, 892-0070 (MAC/IBM formats only)**

General description of program: **Choices on the Playground is a decision-making simulation in which the student playing the simulation is given a "moral" dilemma. The simulation supplies written text and pictures that present the narrative. The student is then asked how he or she might act in such a situation and given four multiple choice answers with which to respond. The student's response determines which direction the story takes. In the end the student is given a review of his or her responses to the "moral" dilemma and asked if he or she still feels the same way about the decisions made.** Good!

Personal response to program: **The program was quite simple to operate, referring to the manual was minimal. Compared to other Tom Snyder programs that I sampled this was the simplest to run. The point system, however, was never fully explained either in the game text or the manual. As far as its stated purpose, to help students with moral decisions, it simply reminds the student of his or her stated values and whether the ensuing decisions were consistent with those values. I think it hits the mark but it might be a bit too difficult to see the finesse involved in teaching such a concept.**

DETAILED CRITERIA TO CONSIDER IN EVALUATION

1. Educational Goals:

Because the curricular goals of the district or individual teacher are sundry it might be impossible to determine the suitability of this software package. At what grade level do we discuss moral decisions and value systems---if we discuss them at all? The program presents a scenario in which the student is asked to make a decision and the reason (values reasons) for making that decision. The computer is appropriate for this task only because it is not inclined to preach at the student over his or her decision. Elementary level K-6 K-2 requires teacher assistance with the reading.

2. Student Role:

The student controls the pace and direction that the simulation takes. The student is occasionally prompted by a conscience/mouse character. But for the most part it is the student that controls the role-playing. The student is directed to make a decision and leaving the particular scenario requires that decision---information only flows in one direction. Also there appears to be only one basic story to the game---once the story is played out the program is "useless." Right!

3. Teacher Role:

Because the programs narrative is entirely written, the program depends on the reading level of the students. Therefore the teacher might be asked to move the story along by aiding in the reading. The other major role would be as a secondary review/reevaluation of how the story went. The program provides adequate documentation with the exception noted above about an undiscussed point system.

4. Program:

This program is adequate for its stated task. The objectives are a bit fuzzy (but then most story/decision making games employ "fuzzy-logic"). The game aspect of this program is easily mastered and there is little opportunity for error.

5. Content/Format/Graphics:

Given that this program was written for an *Apple II,* it makes efficient use of graphics and text space. No sound or animation are employed---which is okay. The point of the game is to focus on the decision, not the screen animation or the lack thereof. Some programs push the Apple II's beyond what they're reasonably capable of, leaving the student waiting for a disk access or wondering what the point of all the razzle-dazzle is (*a personal opinion*). Recalling previously given information is not easily done (one of the program's noted lacks).

6. Evaluation Data:

Tom Snyder Productions seems to bring to these educational tools the kind of professionalism usually found in more general/mass market products. A teacher's guide is provided with program suggestions. Because the program was so easy for me to run I didn't consult the documentation much if at all. Because this is a decision-making piece of software the student's choices are reviewed at each step of the way and in the end.

Nice job!
Try to edit your word processing for more visual appeal.

A–

EDELM 415 NOTEBOOK

WORD PROCESSING

JOE BUSTILLOS
17300 EAST 17TH STREET
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714-832-7778

October 5, 1992

Dear Parents:

October is Harvest Festival Month. Mr. Wordsmith's 4th grade class will be conducting a Harvest musical program at 7:00 P.M. on Friday, October 16th. Mr. Withworth's 3rd grade class will be having a Harvest meal the following Friday, October 23rd at 2:00 P.M. Parent volunteers are needed for both events. Please contact the school office at (714) 853-1212 to volunteer or for further information. Have a wonderful month.

Sincerely,

Alfred P. Crumm
Principal, Avery Day Elementary School

(Apple IIGS - using FrEdWriter)

```
***************************************
**
**What is the name of your favorite
**TV show?
**
***************************************
     My favorite program is Star Trek:
The Next Generation.
***************************************
**
**What is the name of your favorite
**person on that TV show?
**
***************************************
My favorite person on this show is Lt.
Worf.
***************************************
**
**What do you like about this person?
**
***************************************
Lt. Worf is not like anyone else on
this show.  He get to get angry all of
the time because he is a Klingon.
***************************************
**
**Would you like this person to be your
**best friend?
**
***************************************
I would like to be his best friend
because he is big and strong and would
be good to have around when the
bullies on the playground show up.
***************************************
**
**What don't you like about this
**person?
**
**
***************************************
He's kind of scary though.
***************************************
**
**If this person came to our school
**what questions would you ask this
**person?
**
***************************************
I'd probably be hiding in a corner if
he came to our school cause he's scary
looking.
```

My favorite program is Star Trek: The Next Generation. My favorite person on this show is Lt. Worf. Lt. Worf is not like anyone else on this show. He get to get angry all of the time because he is a Klingon. I would like to be his best friend because he is big and strong and would be good to have around when the bullies on the playground show up. He's kind of scary though. I'd probably be hiding in a corner if he came to our school cause he's scary looking.

EDELM 415 NOTEBOOK

TEACHER UTILITIES

JOE BUSTILLOS
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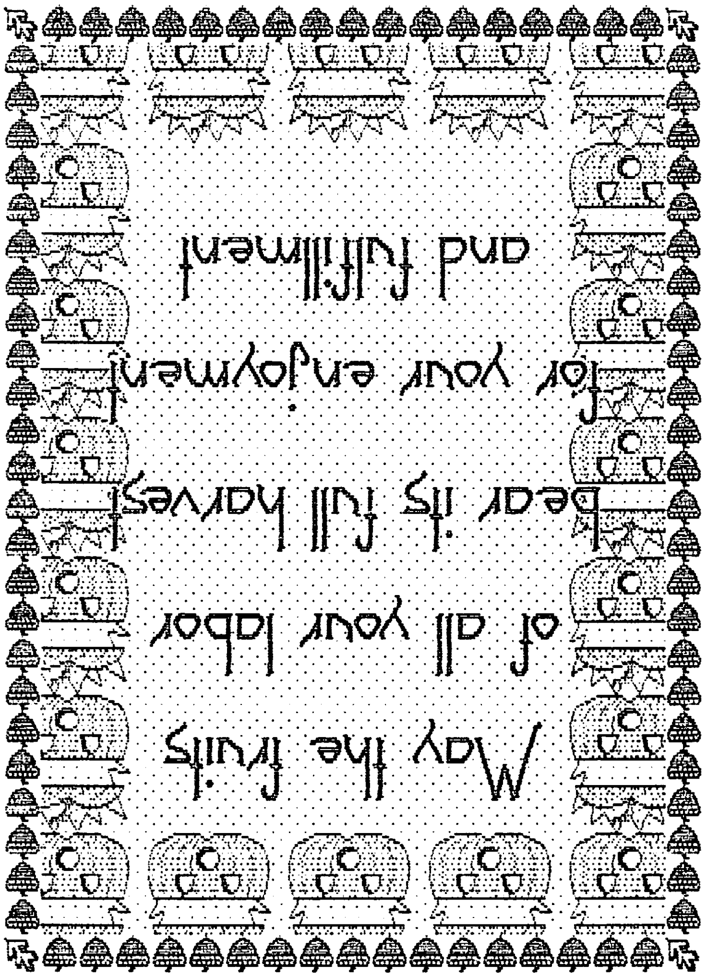
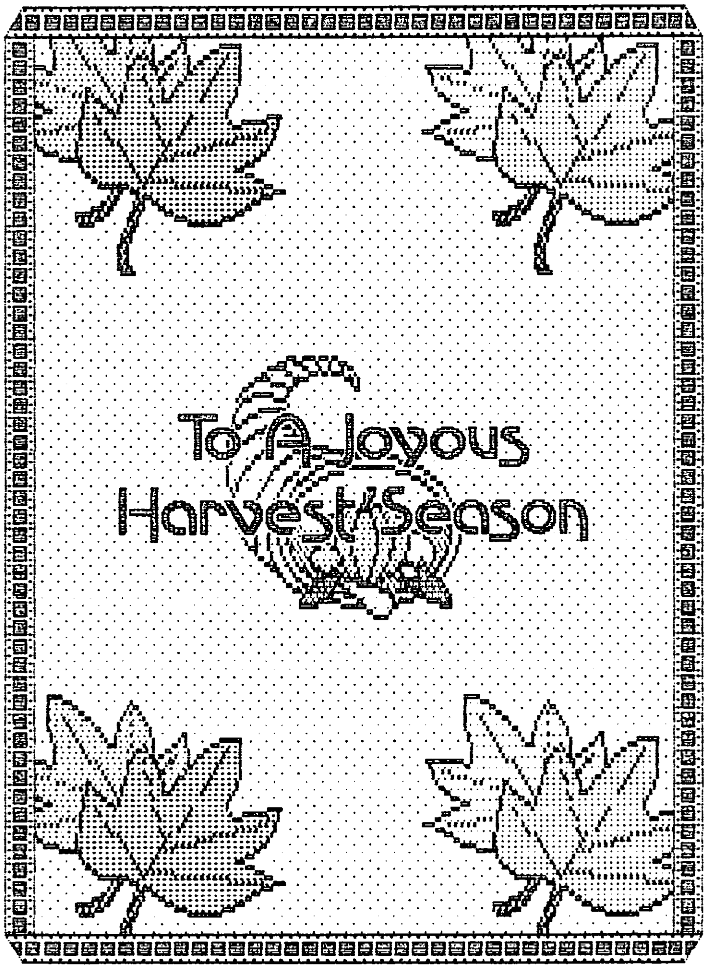
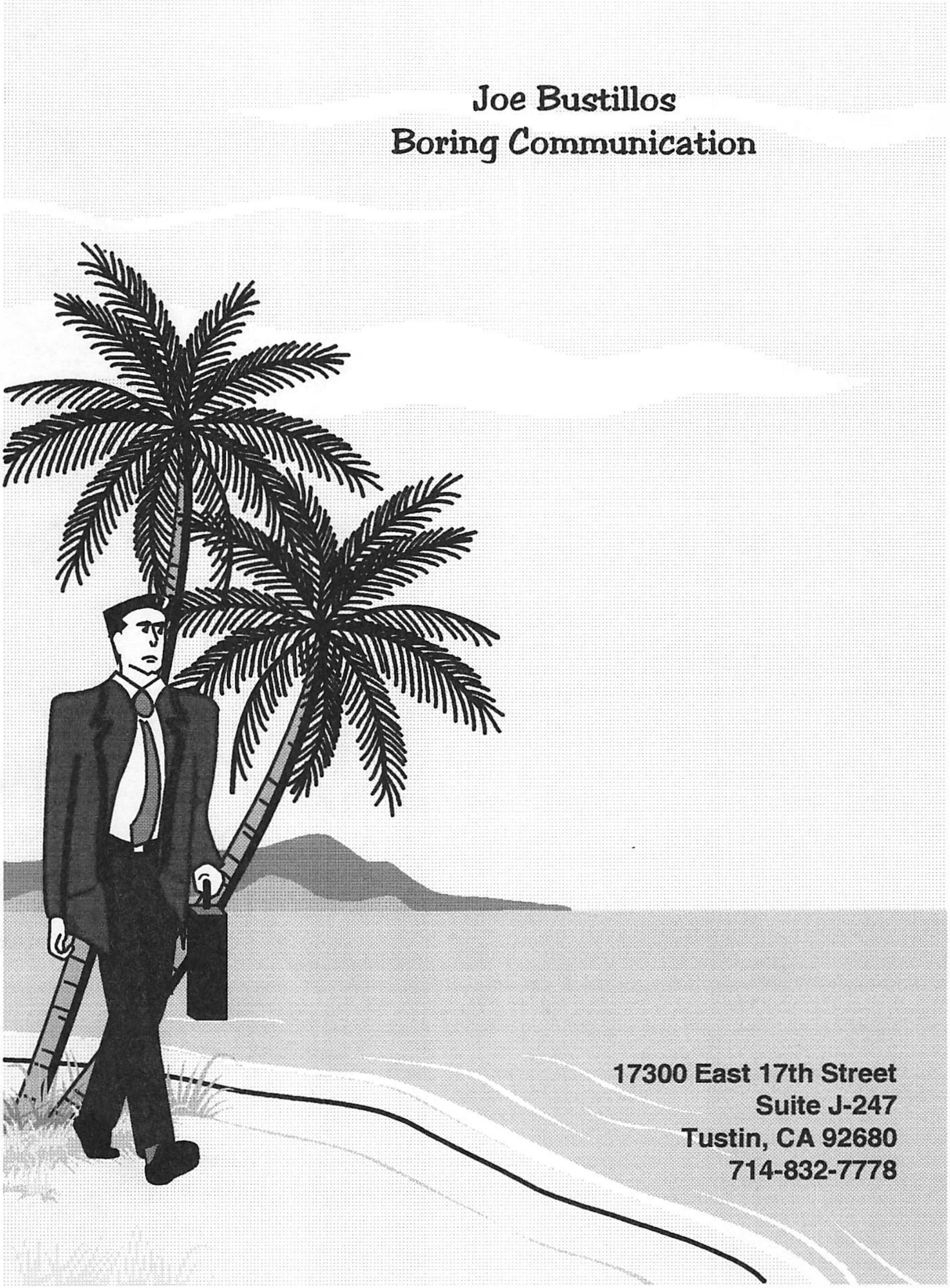


May the fruits
of all your labor
bear its full harvest
for your enjoyment
and fulfillment



Joe Bustillos
Boring Communication



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Boring Communication

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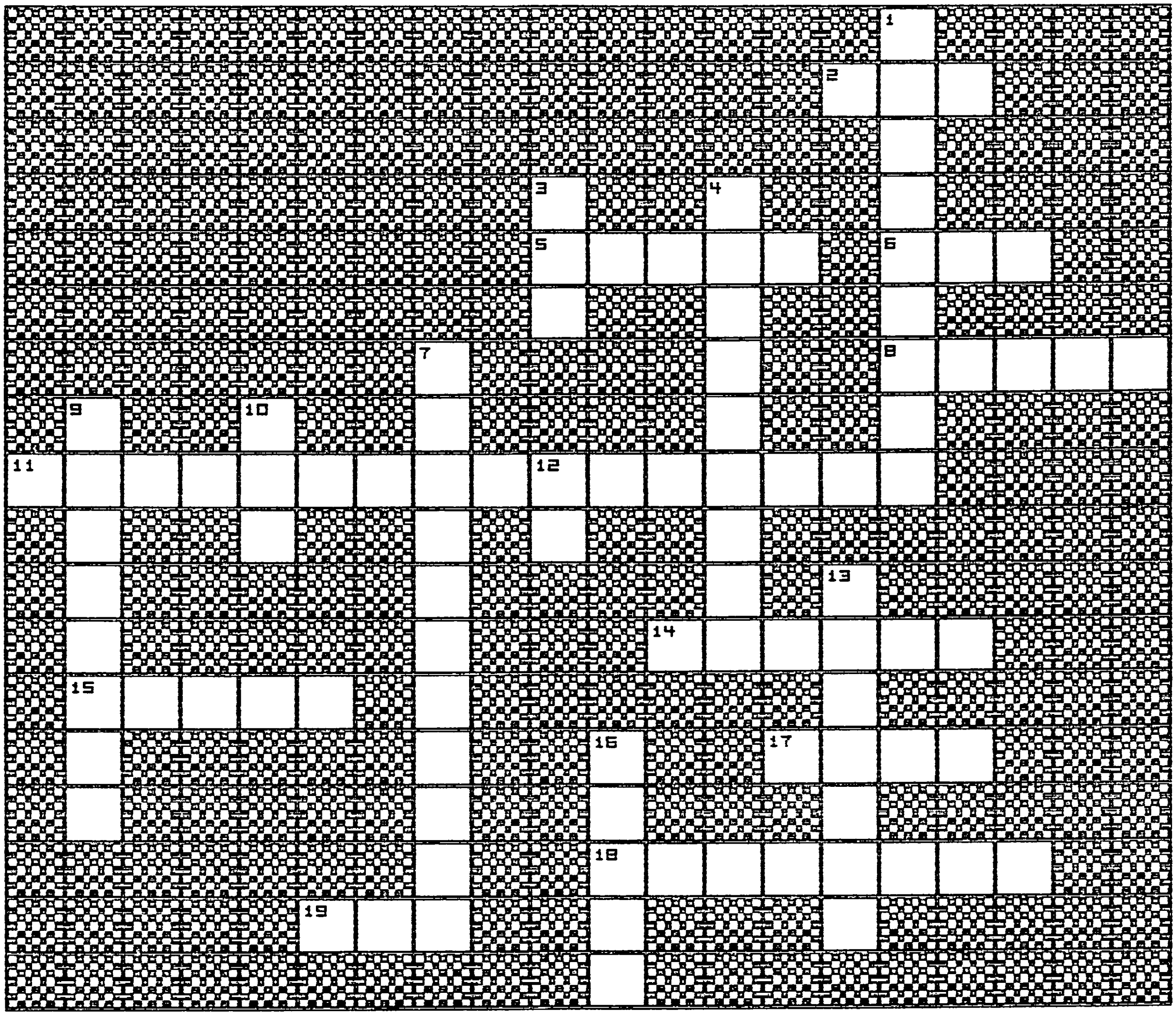
JBB



ACROSS CLUES

2. ABBREVIATION FOR MEMORY NOT PREPROGRAMMED BY THE COMPUTER MANUFACTURER.
5. POPULAR PROGRAMMING LANGUAGE INCLUDED WITH MOST MICROCOMPUTERS
6. APPREVIATION FOR READ ONLY MEMORY
8. A SCREEN ELEMENT
11. COURSE WHERE ONE LEARNS ABOUT THE USE OF COMPUTERS
14. THE AMOUNT OF _______ WHICH DISTINGUISHES A 48K COMPUTER FROM A 8MB (REAL) COMPUTER
15. A POPULAR COMPUTER FOUND IN MANY ELEMENTARY CLASSROOMS
17. UNIT OF STORAGE ON A DISKETTE
18. WHAT HAPPENS IF YOU COVER THE SLOT ON A 5 1/4 DISKETTE
19. DIGIT USED IN THE BINARY NUMBER IN A SYSTEM

DOWN CLUES

1. WHAT HAPPENS TO A MAJORITY OF COMPUTER HARDWARE START-UP COMPANIES
3. ONE POPULAR COMPUTER FOUND IN MANY BUSINESSES
4. COMPUTER DEVICE WHICH ALLOWS FAST RANDOM ACCESS TO FILES
7. AN ELECTRONIC _______ HELPS PUT TOGETHER A BUDGET
9. GENERAL TERM FOR PROGRAMS ON DISKETTE OR OTHER MEDIA WHICH TELL THE COMPUTER WHAT TO DO
10. COMPUTER ERROR
12. ABBREVIATION FOR INPUT/OUTPUT
13. COMMON VISUAL OUTPUT DEVICE
16. A DEMENTED HACKER'S DREAM

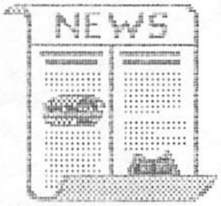
WORD LIST: JBB

APPLE
BASIC
BANKRUPCY
BIT
BUG
COMPUTERLITERACY
DISKDRIVE
FILE
IBM
IO
MEMORY
MONITOR
PIXEL
RAM
READONLY
ROM
SOFTWARE
SPREADSHEET
VIRUS

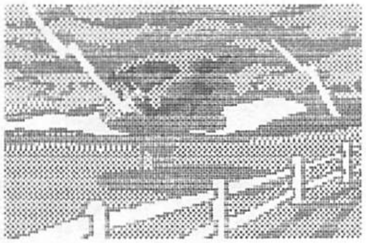
ANSWERS: JBB

															B				
														R	A	M			
															N				
									I			D			K				
									B	A	S	I	C		R	O	M		
									M			S			U				
							S					K			P	I	X	E	L
	S			B			P					D			C				
C	O	M	P	U	T	E	R	L	I	T	E	R	A	C	Y				
	F			G			E		O			I							
	T						A					V		M					
	W						D				M	E	M	O	R	Y			
	A	P	P	L	E		S							N					
	R						H			V			F	I	L	E			
	E						E			I				T					
							E			R	E	A	D	O	N	L	Y		
					B	I	T			U				R					
										S									

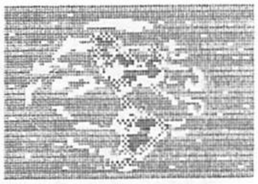
AIR, DIRT & INK: Airing Some Views, Kicking Up Some Dirt & Wasting Some Ink!



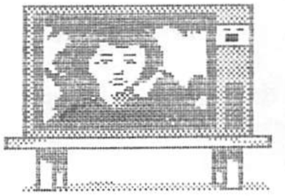
Just when you thought that it was safe to return to the mailbox a new edition of that beloved newsletter, Air, Dirt & Ink arrives. Then you remember, "Oh yeah, it's election time again. I've been expecting a truck-load of meaningless political garbage for some time." Hey, we're here to please. And how do you like our new pictures? The doctor said that it was time for us to get a bit more graphic and less literal. Or was that liberal? Anyway, I hope that this is what he meant.



About those Presidential debates, our fearless leader, George Bush really told that liberal Bill Clinton on what side his S&L is buttered. With the election less than two-weeks away Mr. Bush would have the voters believe that the character of his opponent is what they should concerned with the most. Mr. Clinton is apparently more interested in smiling at his opponent's theories and yammering on about the "Economic State of Our Nation."



Meanwhile, back in Texas, our billionaire friend from "down on the farm," Ross Perot, is buying up TV time to spread his message of hardwork, self-reliance and big ears with pie-graphs and charts. With so many choices what is a growing voter to do?



As a service to our readers let us offer this sage word of advice: JUST VOTE !!!!!!!!!!!!!!!!!!!!!!!!!!

XXX

Thanks for Nothing Award

CSUF - Teacher Ed Program
For Making Unknown Acceptance
Requirement Unclear

J.Q. Public

December 2, 1992

EDELM 415 NOTEBOOK

DATA BASES

JOE BUSTILLOS
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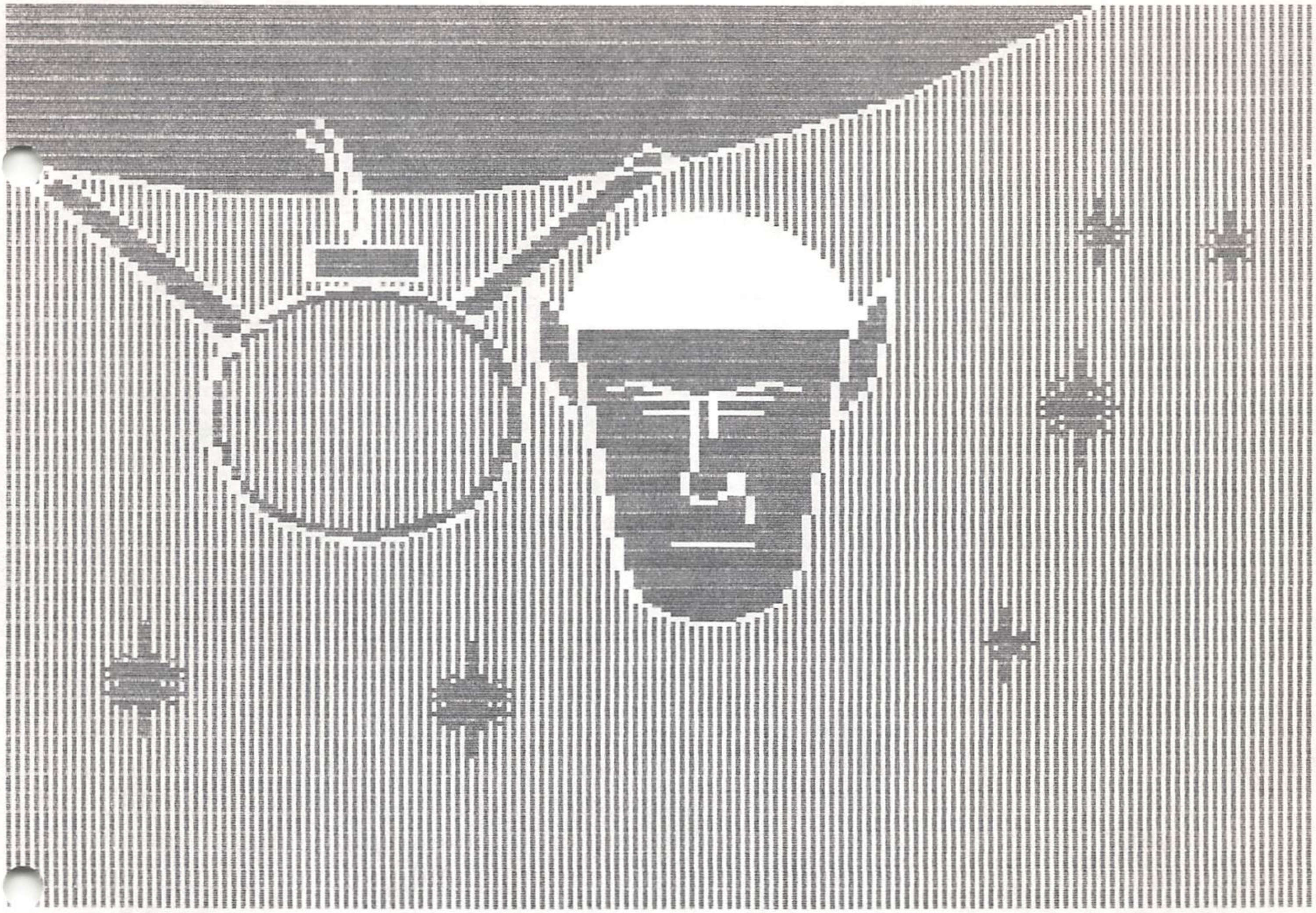
```
                 * * * * * jbb * * * * *

Student Name           Alfred P. Neworth
Gender                 male
Classroom Teacher      Mr. Wordsmith
Grade Level            4th

Student Name           Alicia M. Malendez
Gender                 female
Classroom Teacher      Mr. Wordsmith
Grade Level            4th

Student Name           Everyone I. Shout
Gender                 male
Classroom Teacher      Mr. Withworth
Grade Level            3rd

Student Name           Jenny H. Bristol
Gender                 female
Classroom Teacher      Mr. Wordsmith
Grade Level            4th

Student Name           Josephine M. Dobonky
Gender                 female
Classroom Teacher      Mr. Withworth
Grade Level            3rd

Student Name           Joshua B. Brinkley
Gender                 male
Classroom Teacher      Mr. Withworth
Grade Level            3rd

Student Name           Nomidia R. Idilia
Gender                 female
Classroom Teacher      Mr. Wordsmith
Grade Level            4th
```



JOE BUSTILLOS EDELM 415
LOGO PROJECT

Excellent Logo Drawing!

A

Enjoy the new Star Trek: Deep Space Nine coming out.

Joe Bustillos

EDELM 415 Logo Project

Super Procedure = ST. SPOCK

```
?PO "ST.SPOCK
TO ST.SPOCK
SCRN
SPOCK
SHIP
STAR.FIELD
END
```

great super procedure

```
?PO "SCRN
YOU DON'T SAY WHAT TO DO WITH SCRN
?PO "SCRN
TO SCRN
CS
HT
FS
SETBG 5
END
```

```
?PO "SPOCK
TO SPOCK
SETPC 1
```

```
HEAD
EAR.RT
EAR.LT
FACE.FILL
SETPC 0
HEAD
EAR.RT
EAR.LT
HAIR
BROW
NOSE
MOUTH
END
```

Excellent use of nested procedures

```
?PO "HEAD
TO HEAD
PU
SETPOS [-20 35] SETH 90
PD FD 60 RT 100 FD 60
PU
SETPOS [-20 35] LT 20
PD FD 60 RT 10 ARCL 20 180 PU
END

?PO "EAR.RT
TO EAR.RT
PU
SETPOS [40 35]
SETH 30 PD FD 15
SETH 180 FD 15
ARCR 30 45 PU
END

?PO "EAR.LT
TO EAR.LT
PU
SETPOS [-20 35]
SETH 330 PD FD 15
SETH 180 FD 15
ARCL 30 45 PU
END
```

Very well structured program. Great attention to detail. Looks very much like a sketch. Nicely done!

```
?PO FACE.FILL
FACE.FILL DIDN'T OUTPUT TO PO
?PO "FACE.FILL
TO FACE.FILL
PU
SETPOS [11.47 17.91]
PD FILL
PU
SETPOS [42.1213 32.8787]
PD FILL
PU
SETPOS [-22.1213 32.8787]
PD FILL
PU
END
```

(decimals aren't really necessary)

```
?PO "HAIR
TO HAIR
PU
SETPOS [-20 35]
SETH 0 PD ARCR 30 180
PU
SETPOS [10.93 49.14]
SETH 0
```

```
PD FILL PU
END

?PO "BROW
TO BROW
PU
SETPOS [-5.53 15.91]
SETH 90 PD FD 28 PU BK 14
LT 15 PD FD 15 RT 20 FD 5
PU BK 5 LT 20 BK 15
SETH 105 PD BK 15 LT 20 BK 5
PU
SETPOS [-2.53 12.91]
SETH 90
PD FD 8
PU FD 8
PD FD 8
PU
END

?PO "NOSE
TO NOSE
PU
SETPOS [11.47 17.91]
SETH 180 PD FD 12
PU
SETPOS [6.47 15.91]
SETH 180 PD FD 18
RT 55 ARCL 5 265 PU
END

?PO "MOUTH
TO MOUTH
PU
SETPOS [16.44 -4.06]
SETH 170 PD FD 12
PU
SETPOS [18.52 -22.87]
SETH 270 PD FD 16 PU
END




?PO "SHIP
TO SHIP
SETPC 1
2ND.HULL
PU
SETPOS [-33.79 11.68]
SETH 270 PD FILL PU
TORPEDO.BAY
PU
SETH 315 FD 4
PD FILL PU
PYLON.DISH
FILL.DISH
WARP.PYLONS
PYLONS.FILL
DEFLECTOR
SETPC 0
2ND.HULL
TORPEDO.BAY
PYLON.DISH
```

Sophistication ++

Complexity ++

Originality + Creativity ++

```
WARP.PYLONS
END

?PO "HS
TO HS
SETPOS [-29.79 11.68]
END

?PO "2ND.HULL
TO 2ND.HULL
PU
HS
SETH 0
PD ARCL 34 360
PU
END

?PO "TORPEDO.BAY
TO TORPEDO.BAY
PU
HS
SETH 0 FD 36 LT 90 FD 21 PD
FD 25 RT 90
FD 8 RT 90
FD 25 RT 90
FD 8 PU
END

?PO "PYLON.DISH
TO PYLON.DISH
PU
HS
SETH 0 FD 44 LT 90 FD 36
SETH 0 PD ARCL 50 40
PU
RT 90 FD 4 RT 90
PD ARCR 50 40 PU
RT 90 FD 78 RT 90 FD 20
SETH 90 RT 15
PD ARCL 280 50
PU
END

?PO "FILL.DISH
TO FILL.DISH
PU
PD
SETH 270 FD 232
SETH 180 FD 44
PU SETH 45 FD 15
PD FILL PU
END

?PO "WARP.PYLONS
TO WARP.PYLONS
PU
SETPOS [-39.6618 35.8355]
SETH 45
PD FD 60 LT 90 FD 8 LT 90 FD 60 PU
SETPOS [-86.3922 34.4212]
SETH 315
PD FD 60 LT 90 FD 8 LT 90 FD 60
PU
END
```

I hope you get the chance
to teach LOGO to your
own students!

```
TO PYLONS.FILL
PU
BK 10 LT 90 FD 3
PD FILL PU
SETPOS [-39.6618 35.8355]
SETH 45
FD 10 LT 90 FD 3
PD FILL PU
END

?PO "DEFLECTOR
TO DEFLECTOR
PU
SETPC 4
SETPOS [-33.79 11.68]
SETH 0 PD ARCL 30 360
PU LT 90 FD 10
PD FILL PU
END



?PO "STAR.FIELD
TO STAR.FIELD
PU
SETPC 1
PU
SETPOS [73.1318 -40.2976] STAR.SMALL
SETPOS [120.321 65.0239] STAR.SMALL
SETPOS [93.1318 68.7025] STAR.SMALL
SETPOS [87.9509 28.7643] STAR.BIG
SETPOS [-41.8683 -49.2976] STAR.BIG
SETPOS [-111.868 -44.2977] STAR.BIG
END
```

Great use of SETPOS
for elaboration

```
?PO "STAR.SMALL
TO STAR.SMALL
PU SETH 180
PD FD 18 BK 9
REPEAT 3 [RT 45 FD 5 BK 10 FD 5]
PU
END

?PO "STAR.BIG
TO STAR.BIG
PU SETH 180
PD FD 30 BK 15
REPEAT 7 [RT 22.5 FD 8 BK 16 FD 8]
PU
END

?NODRIBBLE
```

logo-project.

It's time to take my notes from my logo project and pre-formulate the process. JBB

PROJECT TITLE: ST.SPOCK

```
CS              ;clear screen
SETBG 5         ;background=blue     SCRN
```

SPOCK ;super procedure

```
    SETPC 1     ;CHANGE PEN COLOR TO WHITE
```

✓ **HEAD** ;sub-procedure - head outline
;COMMANDS:

```
pu
setpos [-20 35] seth 90
pd fd 60 rt 100 fd 60
pu
setpos [-20 35] lt 20
pd fd 60 rt 10 arcl 20 180 pu
```

✓ **EAR.RT** ;sub-procedure - right ear outline
;COMMANDS:

```
        40 35
pu
setpos [xx xx] ; need coordinates of top-rt corner of head
seth 30 pd fd 15
seth 180 fd 15 arcr 30 45 pu
```

✓ **EAR.LT** ;sub-procedure - left ear outline
;COMMANDS:

```
pu
setpos [-20 35]
seth 330 pd fd 15
seth 180 fd 15 arcl 30 45 pu
```

✓ **FACE.FILL**
;sub-procedure - color face and ears
;COMMANDS:

```
pu
setpos [11.47 17.91]
pd fill   42.1213  32.8787
pu
setpos [xx xx] ;need coordinates within right ear
pd fill
```

-22.1213 32.8787

```
pu
setpos [xx xx] ;need coordinates within left ear
pd fill
pu
```

SETPC 0 ;CHANGE PEN COLOR TO BLACK
HEAD **;sub-procedure - head outline now in black**
EAR.RT **;sub-procedure - right ear outline now in black**
EAR.LT **;sub-procedure - left ear outline now in black**
X **HAIR** **;sub-procedure - hair outline and fill**
;COMMANDS:

```
pu
setpos [-20 35]
seth 0 pd arcr 30 180
pu
setpos [10.93 49.14]
seth 0 pd fill pu
```

X **BROW** **;sub-procedure - brow and eyes outline**
;COMMANDS:

```
pu
setpos [-5.53 15.91]
seth 90 pd fd 28 pu bk 14
lt 15 pd fd 15 rt 20 fd 5
pu bk 5 lt 20 bk 15
seth 105 pd bk 15 lt 20 bk 5
pu
setpos [-2.53 12.91]
seth 90
pd fd 8
pu fd 8
pd fd 8
pu
```

X **NOSE** **;sub-procedure - nose outline**
;COMMANDS:

```
pu
setpos [11.47 17.91]
seth 180 pd fd 12
pu
setpos [6.47 15.91]
seth 180 pd fd 18
rt 55 arcl 5 265 pu
```

X **MOUTH** **;sub-procedure - outline of mouth**
;COMMANDS:

```
pu
setpos [16.44 -4.06]
seth 170 pd fd 12
pu
```

```
setpos [18.52 -22.87]
seth 270 pd fd 16 pu
```

SHIP **;super procedure**

```
    SETPC 1   ;CHANGE PEN COLOR TO WHITE
  X 2ND.HULL
              ;sub-procedure - 2ndary hull outline
              ;COMMANDS:
```

-29.79 11.68 = Port HS

```
pu
setpos [xx xx]
     ;need coordinates of outer ring
     ;[-33.79 11.68]+seth 90 fd 4 pos
seth 0
pd arcl 34 360
pu

    PU SETPOS [-33.79 11.68]
              ;FILLING 2NDARY HULL
    SETH 270 PD FILL PU
  X TORPEDO.BAY
              ;sub-procedure -outline torpedo bay
              ;COMMANDS:

pu
setpos [xx xx] ;above coordinates
seth 0 fd 36 lt 90 fd 21 pd
fd 25 rt 90
fd 8 rt 90
fd 25 rt 90
fd 8 pu
```

-139.359 119.4

```
    PU SETH 315 FD 4
              ;FILLING TORPEDO BAY
    PD FILL PU
  X PYLON.DISH
              ;sub-procedure - pylon&dish outline
              ;COMMANDS:
pu
setpos [xx xx] ;above coordinates
seth 0 fd 44 lt 90 fd 36
seth 0 pd arcl 50 40
pu rt 90 fd 4 rt 90
pd arcr 50 40 pu
rt 90 fd 78 rt 90 fd 20
seth 90 rt 15
pd arcl 280 50 pu
```

HS

200
32

SETPOS [92.6416 119.4]

SETH 290 FD 44

SETH 180

PU SETH 45 FD 15

FILL.DISH

;sub-procedure - fill dish&pylon

;COMMANDS:

```
pu
rt 180 arcr 280 25
rt 90 fd 10
pd fill pu
bk 10 lt 90 arcr 280 25
seth 180 fd 20 seth 90 fd 78
seth 0 fd 10 pd fill pu
```

-39,6613 35,8355

WARP.PYLONS

;sub-procedure-outline of warp drives

;COMMANDS

```
pu
setpos [xx xx] ;see above
seth 0 arcl 34 45 seth 45
pd fd 60 lt 90 fd ~~8 lt 90~~ fd 60 pu
rt 90 arcl 34 90 seth 315
pd fd 60 lt 90 fd ~~8 lt 90~~ fd 60 pu
```

HS

Pos

-36,3922 34.4212

PYLONS.FILL

;subprocedure

;COMMANDS:

```
pu
bk 10 lt 90 fd 3
pd fill pu
bk 3 rt 90 fd 10
lt 90 arcr 34 95
lt 90 fd 5
pd fill pu
```

WARP.ENGINES

;sub-procedure-outline of warp engines

;COMMANDS

```
pu
setpos [xx xx] ;see above
seth 0 arcl 34 45 seth 45
fd 60 lt 90 fd 4
setpc 4
pd arcr 30 360 pu
rt 90 fd 10
pd fill pu
bk 10 lt 90 fd 4
lt 90 fd 60
rt 90 arcl 34 90 seth 315     ;NOTE: left engine may not be
                          ;necessary
fd 60 lt 90 fd 4
pd arcr 30 360 pu
rt 90 fd 10
```

HS

73.1818 -46.2976

```
pd fill pu
```

DEFLECTOR

;sub-procedure - deflector dish

;COMMANDS

```
pu
setpc 4
setpos [-33.79 11.68]
seth 0 pd arcl 30 360
pu lt 90 fd 10
pd fill pu
```

93.1318
68.7025

120.321
65.0239

SETPC 0 ;CHANGE PEN COLOR TO BLACK

2ND.HULL

;sub-procedure - hull outline black

TORPEDO.BAY

;sub-procedure - torpedo outline black

PYLON.DISH

;sub-procedure - dish outline black

WARP.PYLONS

;sub-procedure - engine mounts black

STAR.FIELD ;super procedure

;use as many stars as the page will bear

PU

SETPC 1 ;CHANGE PEN COLOR TO WHITE

PU

setpos[xx xx] STAR.SMALL

;sub-procedure - big stars

;COMMANDS:

```
pu
seth 180
pd fd 18 bk 9
repeat 3 [rt 45 fd 5 bk 10 fd 5]
pu
```

87.9509
28.7643

-41.8683
-49.2976

PU

setpos [xx xx] STAR.BIG

;sub-procedure - stars again

```
pu seth 180
pd fd 30 bk 15
repeat 7 [rt 22.5 fd 8 bk 16 fd 8]
pu
```

-111,868
-44.2977

```
?NODRIBBLE
?PO "ST.SPOCK
TO ST.SPOCK
SCRN
SPOCK
SHIP
STAR.FIELD
END

?PO "SPOCK
TO SPOCK
SETPC 1
HEAD
EAR.RT
EAR.LT
FACE.FILL
SETPC 0
HEAD
EAR.RT
EAR.LT
HAIR
BROW
NOSE
MOUTH
END

?PO "HEAD
TO HEAD
PU
SETPOS [-20 35] SETH 90
PD FD 60 RT 100 FD 60
PU
SETPOS [-20 35] LT 20
PD FD 60 RT 10 ARCL 20 180 PU
END

?PO "EAR.RT
TO EAR.RT
PU
SETPOS [40 35]
SETH 30 PD FD 15
SETH 180 FD 15
ARCR 30 45 PU
END

?PO "EAR.LT
TO EAR.LT
PU
SETPOS [-20 35]
SETH 330 PD FD 15
SETH 180 FD 15
ARCL 30 45 PU
END

?PO "FACE.FILL
TO FACE.FILL
PU
SETPOS [11.47 17.91]
PD FILL
```

```
SETPOS [42.1213 32.8787]
PD FILL
PU
SETPOS [-22.1213 32.8787]
PD FILL
PU
END

?PO "HAIR
TO HAIR
PU
SETPOS [-20 35]
SETH 0 PD ARCR 30 180
PU
SETPOS [10.93 49.14]
SETH 0
PD FILL PU
END

?PO "BROW
TO BROW
PU
SETPOS [-5.53 15.91]
SETH 90 PD FD 28 PU BK 14
LT 15 PD FD 15 RT 20 FD 5
PU BK 5 LT 20 BK 15
SETH 105 PD BK 15 LT 20 BK 5
PU
SETPOS [-2.53 12.91]
SETH 90
PD FD 8
PU FD 8
PD FD 8
PU
END

?PO "NOSE
TO NOSE
PU
SETPOS [11.47 17.91]
SETH 180 PD FD 12
PU
SETPOS [6.47 15.91]
SETH 180 PD FD 18
RT 55 ARCL 5 265 PU
END

?PO "MOUTH
TO MOUTH
PU
SETPOS [16.44 -4.06]
SETH 170 PD FD 12
PU
SETPOS [18.52 -22.87]
SETH 270 PD FD 16 PU
END




?PO "SHIP
TO SHIP
SETPC 1
```

```
2ND.HULL
PU
SETPOS [-33.79 11.68]
SETH 270 PD FILL PU
TORPEDO.BAY
PU
SETH 315 FD 4
PD FILL PU
PYLON.DISH
FILL.DISH
WARP.PYLONS
PYLONS.FILL
DEFLECTOR
SETPC 0
2ND.HULL
TORPEDO.BAY
PYLON.DISH
WARP.PYLONS
END

?PO "2ND.HULL
TO 2ND.HULL
PU
HS
SETH 0
PD ARCL 34 360
PU
END

?PO "TORPEDO.BAY
TO TORPEDO.BAY
PU
HS
SETH 0 FD 36 LT 90 FD 21 PD
FD 25 RT 90
FD 8 RT 90
FD 25 RT 90
FD 8 PU
END

?PO "PYLON.DISH
TO PYLON.DISH
PU
HS
SETH 0 FD 44 LT 90 FD 36
SETH 0 PD ARCL 50 40
PU
RT 90 FD 4 RT 90
PD ARCR 50 40 PU
RT 90 FD 78 RT 90 FD 20
SETH 90 RT 15
PD ARCL 280 50
PU
END

?PO "FILL.DISH
TO FILL.DISH
PU
PD
SETH 270 FD 232
SETH 180 FD 44
PU SETH 45 FD 15
PD FILL PU
END

?PO "WARP.PYLONS
```

```
TO WARP.PYLONS
PU
SETPOS [-39.6618 35.8355]
SETH 45
PD FD 60 LT 90 FD 8 LT 90 FD 60 PU
SETPOS [-86.3922 34.4212]
SETH 315
PD FD 60 LT 90 FD 8 LT 90 FD 60
PU
END

?PO "PYLONS.FILL
TO PYLONS.FILL
PU
BK 10 LT 90 FD 3
PD FILL PU
SETPOS [-39.6618 35.8355]
SETH 45
FD 10 LT 90 FD 3
PD FILL PU
END

?PO "DEFLECTOR
TO DEFLECTOR
PU
SETPC 4
SETPOS [-33.79 11.68]
SETH 0 PD ARCL 30 360
PU LT 90 FD 10
PD FILL PU
END

?PO "HS
TO HS
SETPOS [-29.79 11.68]
END




?PO "STAR.FIELD
TO STAR.FIELD
PU
SETPC 1
PU
SETPOS [73.1318 -40.2976] STAR.SMALL
SETPOS [120.321 65.0239] STAR.SMALL
SETPOS [93.1318 68.7025] STAR.SMALL
SETPOS [87.9509 28.7643] STAR.BIG
SETPOS [-41.8683 -49.2976] STAR.BIG
SETPOS [-111.868 -44.2977] STAR.BIG
END

?PO "STAR.SMALL
TO STAR.SMALL
PU SETH 180
PD FD 18 BK 9
REPEAT 3 [RT 45 FD 5 BK 10 FD 5]
PU
END

?PO "STAR.BIG
TO STAR.BIG
```

```
PU SETH 180
PD FD 30 BK 15
REPEAT 7 [RT 22.5 FD 8 BK 16 FD 8]
PU
END

?PO "SCRN
TO SCRN
CS
HT
FS
SETBG 5
END

?NODRIBBLE
```